

ABSTRACT

An electron beam apparatus, in which an electron beam emitted from an electron gun having a cathode and an anode is focused and irradiated onto a sample, and secondary electrons emanated from the sample are directed into a detector, the apparatus further comprising means for optimizing irradiation of the electron beam emitted from the electron gun onto the sample, the optimizing means may be two-stage deflectors disposed in proximity to the electron gun which deflects and directs the electron beam emitted in a specific direction so as to be in alignment with the optical axis direction of the electron beam apparatus, the electron beam emitted in the specific direction being at a certain angle with respect to the optical axis due to the fact that, among the crystal orientations of said cathode, a specific crystal orientation allowing a higher level of electron beam emission out of alignment with the optical axis direction.